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**Characterization and Control of Microstructure in Combinatorially Prepared Aluminum-Silicon Thin Film Nanocomposites** DAAD HADDAD, School of Materials Engineering, Purdue University, West Lafayette, IN 47907, CHARLES OLK, MICHAEL LUKITSCH, Materials and Processes Laboratory, General Motors Research and Development Center, Warren, MI 48090 — In this presentation, we describe the application of thin film combinatorial methods to systematically control the microstructure of  $\text{Al}_x\text{Si}_{(1-x)}$  alloys through variations in composition and growth temperature. Libraries of compositionally graded films have been sputter deposited onto silicon substrates. The microstructure was investigated using x-ray diffraction while atomic force microscopy techniques were employed to obtain surface morphology and phase distribution. We will also report the results of the mechanical properties we have investigated on these films.

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